

REQUEST FOR RECONSIDERATION

Claims 15 – 25 are active.

The claimed invention provides a method for the preparation of aqueous dispersions of polyurethane polymers, wherein the prepolymer solutions have lower viscosity and the resulting coating films have improved weathering resistance.

Conventionally, N-alkyl pyrrolidones are added to finished polyurethane dispersions to adjust the physical parameters of the dispersion. Surprisingly, Applicants have discovered that if N-ethyl- or N-cyclohexyl-pyrrolidone is present during the polymerization, advantages not obtained by conventional treatment can be obtained. The advantages achieved by the method of the claimed invention includes at least one of the following (Page 16, lines 24-34):

Reduced solvent requirement.

The dispersions are easier to apply by spraying or through nozzles, since encrustation or contamination on spraying tools is reduced.

Lower toxicity than, for example, N-methylpyrrolidone.

The prepolymer solutions have a lower viscosity.

The rheology of the polyurethane dispersions is improved.

The wetting behavior of substrates or additives is improved.

Lower yellowing under light and/or heat exposure.

Greater frost resistance of the dispersions.

Improved flexibility, particularly lower-temperature flexibility, of the resultant films.

Higher gloss of the resultant films.

The rejection of Claims 15-25 under 35 U.S.C. 103(a) over Bruchmann et al. (DE 10161156; equivalent to U.S. 2005/0043467) in view of Galan et al. (U.S. 4,757,095) is respectfully traversed.

Bruchmann describes an aqueous dispersion of a water dispersible polyurethane and a process for preparing the aqueous dispersion involving reacting the monomers in the presence of a cesium salt. Nowhere does this reference disclose or suggest the addition of N-ethyl- or N-cyclohexylpyrrolidone to the preparation of the prepolymer mixture. Applicants

respectfully submit that Bruchmann actually indicates a preference that the described aqueous dispersions be free of solvent in [0085], by stating:

The dispersions preferably have a solvent content of less than 10% by weight, and are, **with particular preference, free from solvents.** (Bold added)

The Office acknowledges that “Bruchmann does not teach preparing the polyurethane in the presence of N-ethylpyrrolidone or N-cyclohexyl pyrrolidone (Official Action dated October 29, 2008, page 2, lines 21-22) and cites Galan to show the use of lactones and lactams.

Galan describes a process for preparing a polyurethane-polyurea composition utilizing prepolymers prepared in the presence of lactones or lactams. The prepolymers are then employed to prepare the polyurethane-polyurea composition as microcellular foams. Nowhere does this reference disclose that the polyurethane is water dispersible nor is there any suggestion regarding water dispersibility of the polymer composition. Galan is directed to a non-aqueous technology (microcellular foam systems) employing polymers not specifically composed to be water dispersible and therefore does not describe or suggest a method for preparing an aqueous dispersion.

In a Precedential Opinion rendered by the Board of Patent Appeals and Interferences (Ex parte Whalen II, Appeal 2007-4423, p. 16, lines 5-9, decided July 23, 2008) the Board stated:

The KSR Court [KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398 (2007)] noted that obviousness cannot be proven merely by showing that the elements of a claimed device were known in the prior art; it must be shown that those of ordinary skill in the art would have had some “apparent reason to combine the known elements in the fashion claimed.”

The Office has stated (Official Action dated September 29, 2008, beginning on page 2, line 22 and continuing to page 3):

However, Galen et al. teaches using lactones and lactams in the preparation of polyurethanes (Abs). A particularly suited lactam is N-ethylpyrrolidone (6:35-40). Bruchmann and Galan are analogous art because they are from the same field of endeavor, namely polyurethane additives. At the time of the invention a person of ordinary skill in the art would have found it obvious to have used N-ethylpyrrolidone, as taught by Galan, in the invention of Bruchmann, in order to make a polyurethane product with the unexpected and improved properties when compared to polyurethane elastomers which are prepared in the absence of either a lactone or a lactam, such as good cold temperature flexibility.

Applicants respectfully submit that the Office has not reasonably explained how or why a person of ordinary skill in the art, at the time of the invention, would have combined the cited references to obtain the claimed invention. The Office alleges that because Galan describes good cold temperature flexibility, obtained in a reaction injected molded product of polyurethanepolyurea microcellular foam (Col. 7, lines 52-57), one of ordinary skill in the preparation and application of aqueous polyurethane dispersion would be motivated to combine the aqueous material of Bruchmann with the microcellular foam chemistry of Galan. Applicants respectfully submit that as indicated above, Bruchmann teaches no solvent present is the preferred aqueous dispersion.

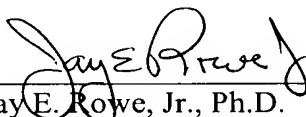
In contrast, Galan describes nonaqueous polyurethane prepolymers and injected molded foams. Contrary to the Office's statement, Applicants respectfully submit that the two references do not pertain to the same field of endeavor, do not deal with the same problem, and are nonanalogous art. The Office has not explained why a person of ordinary skill in the art would have proceeded contrary to the teaching of Bruchmann and added a solvent which improved a property of an unrelated nonaqueous microcellular foam product. Moreover, the Office has not explained why one of ordinary skill in the art, at the time of invention, would have added solvent to the preparation of the prepolymer, as according to the claimed invention. Accordingly, the Office has not met its burden to show a prima facie case of obviousness.

In view of all the above, Applicants respectfully submit that the cited combination of references can neither anticipate nor render obvious the claimed invention. Accordingly, withdrawal of the rejection of Claims 15-25 under 35 U.S.C. 103(a) over Bruchmann in view of Galan is respectfully requested.

Applicants respectfully submit that the above-identified application is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Jay E. Rowe, Jr., Ph.D.
Registration No. 58,948

Customer Number

22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/07)